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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------------|----------------------|---------------------------|------------------|
| 10/765,368 | 01/27/2004 | Henry Allen Hill | 114096.121 US2 (ZI-47) | 1581 |
| 23483 | 7590 | 01/05/2007 | | |
| WILMER CUTLER PICKERING HALE AND DORR LLP 60 STATE STREET BOSTON, MA 02109 | | | EXAMINER FANG, JERRY C | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2873 | |
| SHORTENED STATUTORY PERIOD OF RESPONSE | NOTIFICATION DATE | DELIVERY MODE | | |
| 3 MONTHS | 01/05/2007 | ELECTRONIC | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 01/05/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/765,368

Applicant(s)

HILL, HENRY ALLEN

Examiner

Jerry Fang

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-28,38 and 49-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25,28,38,49-52 and 54 is/are rejected.
- 7) ☒ Claim(s) 26,27 and 53 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 11/3/2006 have been fully considered but they are not persuasive. Applicant's argument stated that Alfano's circuit modulates "time duration and amplitude" whereas the invention claimed modulates in either phase or frequency. This argument is not persuasive because the relationship between time and frequency (frequency = 1 / period) suggests that the modulation in time duration will also modulate the frequency as well.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

1. Claims 25, 28, 38, 49, 52, and 54 are rejected under 35 U.S.C. 102(a) as being anticipated by Alfano et al. (US 5,150,248).

Regarding claim 25, Alfano discloses a beam generation module (Fig. 1, 13) which during operation delivers an output beam (Fig. 1, 14-1) that includes a first beam at a first frequency and a second beam at a second frequency that is different from said first frequency, said first and second beams within the output beam being coextensive, said beam generation module including a beam conditioner which during operation introduces a sequence of different shifts in a selected parameter of each of the first and

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second beams, said selected parameter selected from a group consisting of phase and frequency (Col. 3, Lines 21-58).

Regarding claim 28, Alfano discloses wherein the beam conditioner is constructed to introduce a first sequence of different frequency shifts into the frequency of the first beam and concurrently therewith a second sequence of different frequency shifts into the frequency of the second beam (Fig. 3, 71).

Regarding claim 38, Alfano generating an output beam (Fig. 1, 14-1) that includes a first beam at a first frequency and a second beam at a second frequency that is different from said first frequency, said first and second beams within the output beam being coextensive', and introducing a sequence of different shifts in a selected parameter of each of the first and second beams, said selected parameter selected from a group consisting of phase and frequency (Col. 3, Lines 21-58).

Regarding claim 49, Alfano discloses wherein the beam generation module further comprises a beam source (Fig. 1, 13) which during operation generates a single input beam at a predetermined frequency, and wherein the beam conditioner comprises an optical element that derives the first and second beams from the single input beam (Fig. 3, 71).

Regarding claim 52, Alfano discloses a controller which controls the beam conditioner and causes said beam conditioner to introduce the first and second sequences of different shifts in the selected parameter of each of the first and second beams (Fig. 1, 12).

Regarding claim 54, Alfano discloses wherein introducing a sequence of different shifts involves introducing a first sequence of different frequency shifts into the frequency of the first beam and concurrently therewith a second sequence of different frequency shifts into the frequency of the second beam (Fig. 3, 71).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 50 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alfano et al. (US 5,150,248) as applied to claim 25 above, and further in view of Izatt et al. (US 2003/0025913).

Regarding claim 50, Alfano fails to disclose wherein said optical element is an acousto-optic modulator. Izatt discloses wherein said optical element is an acousto-optic modulator (Para. 0057). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an acousto-optic modulator as an optical

element as taught by Izatt, with the source beam assembly of Alfano, since as shown by Izatt, an acousto-optic modulator is commonly used as an optical element in order to modulate light.

Regarding claim 51, Alfano fails to disclose wherein the beam conditioner includes a first set Of acousto-optic modulators for introducing the first sequence of different frequency shifts into the frequency of the first beam and a second set of acousto-optic modulators for introducing the second sequence of different frequency shifts into the frequency of the second beam. Izatt disclose wherein the beam conditioner includes a first set Of acousto-optic modulators for introducing the first sequence of different frequency shifts into the frequency of the first beam and a second set of acousto-optic modulators for introducing the second sequence of different frequency shifts into the frequency of the second beam (Para. 0057). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use multiple acousto-optic modulators as taught by Izatt, with the source beam assembly of Alfano, since as shown by Izatt, acousto-optic modulators is commonly used as an optical element in order to modulate light.

Allowable Subject Matter

3. Claims 26, 27, and 53 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The allowable features being:

a first sequence of different discrete phase shifts into a relative phase difference between the first and second components of the first beam and concurrently therewith a second sequence of different discrete phase shifts into the relative phase difference between the first and second components of the second beam (claims 26 and 53).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art is listed as the following: Tanno (US 5,214,633), which is pertinent to the multiple light beams mentioned in claim 25.
5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
6. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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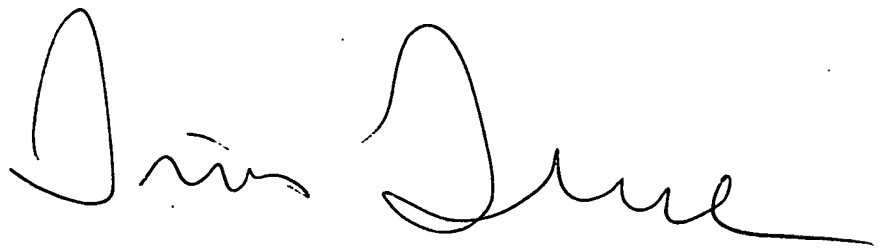
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Fang whose telephone number is 5712726013.

The examiner can normally be reached on 10-8.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 5712722333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

J.F.
12/14/2006

A handwritten signature in black ink, appearing to read 'Tim Thompson', with a large, stylized initial 'T'.

**TIMOTHY THOMPSON
PRIMARY EXAMINER**